

Medical News

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PELOTONIA FUNDRAISING CONTRIBUTES TO 11 NEW CANCER RESEARCH GRANTS AT OHIO STATE

COLUMBUS, Ohio – The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute ([OSUCCC – James](#)) announced 11 new Idea Grants awarded through the 2013 Intramural Research Program.

These multiyear research grants, which total \$1.4 million and present creative approaches to understanding and curing cancer, are a way to help teams of scientists at Ohio State start projects that can later attract larger external grants. The [Idea Grants](#) are funded primarily by dollars raised through [Pelotonia](#), a grassroots bicycle tour established in 2009 to raise money for cancer research at Ohio State. Forty Idea Grants have been awarded in the past four years since the inception of Pelotonia at an investment exceeding \$4 million.

“Asking questions that lead to brilliant ideas is at the root of scientific discovery,” said [Dr. Michael Caligiuri](#), director of the OSUCCC and CEO of The James. “Quantum leaps in science are made by this type of innovative thinking, but funding for the early pursuit of such initiatives is hard to obtain. With unwavering commitment, our community has rallied behind Pelotonia to raise money and provide Ohio State with resources to recruit the best and the brightest minds, to have the tools, technology and instrumentation needed to conduct the research, and to fund new, bold ideas – ideas that without the support of Pelotonia would likely remain unexplored.”

The Idea Grants cover an array of studies, such as using a unique variety of tomato, known as the tangerine tomato, grown at Ohio State to fight prostate cancer; ‘liquid biopsy’ for early detection of lung and liver cancers; and critically needed improved therapies for patients with triple negative breast cancer.

“Cancer research is expensive, but 11 new creative approaches to advance science toward a cancer-free world can now become a reality,” Caligiuri said. “Pelotonia helps Ohio State bridge the gap left by diminished federal funding for cancer research, and it is the contribution from each rider and donor that will help to grow a new generation of cancer scientists.”

In addition to the Pelotonia Idea Awards, the OSUCC – James also has awarded about \$1 million a year to fund the University's youngest cancer researchers, from undergraduates to physician-scientists and other postdoctoral fellows, to propel their cancer research careers with exciting science conducted in the labs of faculty mentors.

Here is the list with descriptions of the newest Idea Grant awards, including 2013 Idea Grant titles, principal investigators and research synopses:

CD200R Signaling in Melanoma Progression and Immunotherapy – Xue-feng Bai, MD, PhD, and Lai-Chu Wu, PhD. This team's recent studies have shown that melanoma cell expression of CD200, a cell-surface glycoprotein, can significantly inhibit melanoma tumor formation and metastasis (spread). This inhibition appears to be mediated by CD200 receptor (CR200R)-

positive myeloid cells. Information generated by this study will help the investigators understand the role of CD200R signaling in melanoma pathogenesis and immunotherapy.

Tangerine Tomato Phytochemical Bioavailability and Metabolism in Men With Prostate Cancer – Steven Schwartz, PhD. This study will determine whether the tangerine type tomato should be the principal tomato used in the University's ongoing tomato-soy juice project targeted toward prostate cancer. The tangerine tomato is a unique cultivar bred at Ohio State that accumulates the phytochemical lycopene in a form that is more bioavailable than that found in red tomatoes. The IRP grant will support a clinical trial in which men with prostate cancer who are about to undergo prostatectomy will be assigned to a low-lycopene diet or consume two servings of either tangerine tomato juice or red tomato juice for four weeks before surgery; data on the absorption and biodistribution of phytochemicals will impact study design for a planned NIH grant renewal application in 2014.

MEK and AKT Inhibition in Patients With Advanced Triple Negative Breast Cancer – Erin Olson, MD. Because patients with triple negative breast cancer (TNBC) have poor clinical outcomes, scientists are seeking new targeted therapies. This study will evaluate the ability of *MEK* and *AKT* protein inhibitor-based therapies to cause a durable antitumor response in advanced TNBC and to understand predictors of sensitivity and mechanisms of resistance to these agents. This approach will involve the first clinical trial to evaluate a novel targeted combination strategy for metastatic TNBC (this project is entirely supported by the Stefanie Spielman Fund for Breast Cancer Research at the OSUCCC – James.)

CS-1 Targeted NK vs. T-Cell Chimeric Antigen Receptor Therapy With or Without Elotuzumab – Jianhua Yu, PhD, and Craig Hofmeister, MD. Researchers hypothesize that targeting CS-1, an antigen that is highly expressed on multiple myeloma (MM) cells, by chimeric antigen receptor (CAR) natural killer (NK) cells alone or in combination with CAR T cells or a drug called elotuzumab is a promising therapeutic strategy for patients with MM, a currently incurable disease. This team will test their hypothesis in both *in vitro* studies and *in vivo* model systems. They believe this work will lay the foundation for a phase I clinical trial for relapsed MM using autologous (the patient's own) CAR immune cells.

Tethered Cationic Lipoplex Nanoparticle (TCLN) Assay for Early Lung and Liver Cancer Detection and Surveillance via Extracellular RNAs in Exosomes and Circulating Tumor Cells – L. James Lee, PhD; Patrick Nana-Sinkam, MD; Kalpana Ghoshal, PhD; Michael Paulaitis, PhD; and Carl Schmidt, MD. This team has developed a simple and low-cost "Tethered Cationic Lipoplex Nanoparticle (TCLN)" biochip that may provide a patient-friendly early detection and surveillance assay for lung and liver cancer by detecting circulating tumor cells or extracellular RNAs in patient blood samples. With this proposal, they will evaluate the feasibility of this technique in animal model and patient samples and use the data to submit two grant proposals to the NCI in two years and a third proposal in the future.

STAT3 as a Mediator of Immune Suppression in the Pancreatic Cancer Stroma – Gregory Lesinski, PhD, MPH, and Michael Ostrowski, PhD. A hallmark of pancreatic cancer is a network of pancreatic stellate cells (PSCs) that arise from chronic inflammation and surround each tumor to promote tumor growth while suppressing the immune system. This team will develop a research program aimed at understanding how PSCs influence immune suppression in pancreatic cancer so they can prioritize cellular targets and manipulate them to enhance immunotherapy. They believe a gene called *STAT3* in PSCs plays a key role in immune suppression, a hypothesis they will test by developing a mouse model of pancreatic cancer so they can study how *STAT3* promotes PSC survival and use these data for a future NCI grant application.

Novel Small Molecule Inhibitor of PHD3 Effects on Human Breast Cancer Metastasis and Migration on Nanoscale Variable Modulus Devices – Tim Eubank, PhD, and John Lannutti, PhD. In search of better treatments for triple negative breast cancer (TNBC), this team has discovered a pathway activated by a novel small molecule inhibitor of an enzyme called prolyl hydroxylase 3 (PHD3), which is thought to play a part in TNBC tumor metastasis (spread). In this project, they will study the ability of their PHD3 inhibitor to reduce the metastatic potential of TNBC cells in an animal model. This study will use nanoscaled tools originating within the Nanoscale Science and Engineering Center at Ohio State.

Insulin Receptor Splicing in Response to Hypoxia and Drug Resistance: A Pilot Study – Dawn Chandler, PhD, and Peter Houghton, PhD. Solid tumors are characterized by hypoxia (oxygen deficiency), and the ability of the tumor cells to adapt to hypoxia is essential for tumor progression. This study seeks to understand the mechanisms and consequences of insulin receptor (*IN-R*) gene splicing, or natural chemical alteration of DNA, in response to hypoxia – testing the hypothesis that splicing factors are modulated in response to hypoxia and are thus involved in the alternative splicing of the *IN-R* gene that contributes to tumor formation. The team has developed a splicing method that mimics cells that have undergone hypoxia, and they will use this to study regulatory mechanisms for this process in hopes of finding targets for therapeutic intervention.

PRMT5 Dysregulation as a Driver Event in Richter's Transformation – Rosa Lapalombella, PhD, and Robert Baiocchi, MD, PhD. Richter's transformation (RS) is a complication of chronic lymphocytic leukemia (CLL) in which the leukemia changes into a rapidly proliferating and aggressive form of lymphoma with a poor prognosis despite the use of standard lymphoma therapy. The cause(s) of this transformation is not well understood, and there is a need for discovery of novel therapeutic targets. This team hypothesizes that dysregulation of a protein called PRMT5, which is variably expressed in CLL and overexpressed (overly active) in RS, is a driver event in CLL transformation to lymphoma. Using gene- and RNA-sequencing methods, they hope to shed light on how PRMT5 dysregulation causes the transformation – information that may lead to novel therapeutic approaches to RS.

Gene Discovery Using a Drosophila Tumor Model – Amanda Simcox, PhD, and Victor Jin, PhD. Because the *Ras* gene signaling pathway is implicated in multiple cancers, an intense effort is under way to study *RAS* regulators and effectors. This team has developed a conditional *RAS*-driven tumor cell model in *Drosophila* (fruit flies) that they will use to discover genes in the *RAS* pathway and also to investigate tumor cell dormancy, which is important because, in this state, the cells evade cancer therapies that target proliferating cells. These dormant cells need to be killed too, because they can later cause cancer recurrence.

The Role of the Epstein-Barr Virus in NK-cell Lymphoma – Aharon Freud, MD, PhD; Robert Baiocchi, MD, PhD, and Pierluigi Porcu, MD. Extranodal natural killer (NK) cell lymphoma, nasal type (ENKL) is an aggressive disease that stems from the Epstein-Barr virus (EBV) infecting and transforming NK immune cells. Very little is known about how this rare form of invasive cancer develops, and even less is known about the mechanisms of drug resistance that limit the effectiveness of chemotherapy for patients with ENKL. Therefore, laboratory models are needed to study viral pathogenesis, immune response and drug therapy for these patients. Based on hypotheses stemming from their earlier work, this team will develop models to study mechanisms of EBV-induced NK cell transformation and to characterize the body's immune response to ENKL for therapeutic purposes.

[The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute](#) strives to create a cancer-free world by integrating scientific research with excellence in education and patient-centered care, a strategy that leads to better methods of prevention, detection and treatment. Ohio State is one of only 41 [National Cancer](#)

[Institute](#) (NCI)-designated Comprehensive Cancer Centers and one of only four in the United States funded by the NCI to conduct both phase I and phase II clinical trials. The NCI recently rated Ohio State's cancer program as "exceptional," the highest rating given by NCI survey teams. As the cancer program's 228-bed adult patient-care component, The James is a "Top Hospital" as named by the Leapfrog Group and one of the top cancer hospitals in the nation as ranked by *U.S. News & World Report*.

[Pelotonia](#)

Pelotonia is a three-day experience that includes cycling, entertainment and volunteerism. Pelotonia riders agree to a personal grassroots fundraising commitment that involves requesting donations from friends and family. Over the past four years, thousands of Pelotonia riders have raised more than \$42 million for cancer research at Ohio State's Comprehensive Cancer Center – James Cancer Hospital and Solove Research Institute. Thanks to the generosity of Pelotonia's funding partners, the organization is able to direct 100 percent of all money raised by riders and donors to life-saving cancer research.

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